Agreement attraction: Roles of active dependencies and attractor positio

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Background

- Subject-verb number agreement is affected by *attraction* (e.g. Wagers et al (2009, JML); Lago et al (2015, JML)):
  - Processing difficulty for ungrammatical agreement is reduced in presence of matching attractor:

Easier (matching distractor) [from Lago et al, 2015]

The players that the coach **were** always praising very enthusiastically decided to leave the team.

Harder (mismatching distractor) [from Lago et al, 2015]

The player that the coach **were** always praising very enthusiastically decided to leave the team.

- In cue-based retrieval models (e.g. Lewis & Vasishth, 2015, Cognitive Science), this attraction effect is due to occasional mis-retrieval of the matching distractor (e.g. *players*).

Is attraction affected by the "active" status of a distractor?

- The widows said that the nurse **were** reluctant to work long shifts.
- The widows who said that the nurse **were** reluctant to work ... VERB ...

Is attraction affected by relative order of distractor & target?

- The widows said that the nurse most definitely **were** reluctant to work ...
- The nurse who the the widows relied on definitely **were** reluctant to work ...

Experiment 1: Inactive, non-intervening distractor

1a. Ungrammatical: Matching distractor

The widows said that **the nurse** most definitely/ **were**/ reluctant/ to work/ long shifts.

1b. Ungrammatical: Mismatching distractor

The widow said that **the nurse** most definitely/ **were**/ reluctant/ to work/ long shifts.

1c. Grammatical

The widow said that **the nurses** most definitely/ **were**/ reluctant/ to work/ long shifts.

Experimental details (applies to all 4 Exps)

- Critical verb (*were*) identical in all three conditions
- Items adapted from Dillon et al (2013, JML)
- Design focused on attraction in ungrammatical sentences, so included only one grammatical condition
- 16 items per condition (48 items overall), so reasonable power to detect effect
- 39 participants; 48 sentences; Eyelink 1000
- Analysis concentrated on GO-PAST:
  - Sum of fixation durations from first entry into the region from left to first exit to right.
- Analysis used LMER on combined region ("relucatant"+ "to work"), including region as a factor.

Experiment 2: Active, non-intervening distractor

1a. Ungrammatical: Matching distractor

The widows who said that **the nurse** most definitely/ **were**/ reluctant/ to work/ long shifts had become quite annoyed.

1b. Ungrammatical: Mismatching distractor

The widow said that **the nurse** most definitely/ **were**/ reluctant/ to work/ long shifts had become quite annoyed.

1c. Grammatical

The widow said that **the nurses** most definitely/ **were**/ reluctant/ to work/ long shifts had become quite annoyed.

Experiment 3: Intervening Subject distractor

1a. Ungrammatical: Matching distractor

The nurse who the widows relied on definitely/ **were**/ reluctant/ to work/ long shifts.

1b. Ungrammatical: Mismatching distractor

The nurse who the widow relied on definitely/ **were**/ reluctant/ to work/ long shifts.

1c. Grammatical

The nurses who the widow relied on definitely/ **were**/ reluctant/ to work/ long shifts.

Experiment 4: Intervening Object distractor

1a. Ungrammatical: Matching distractor

The nurse who cared for the widows definitely/ **were**/ reluctant/ to work/ long shifts.

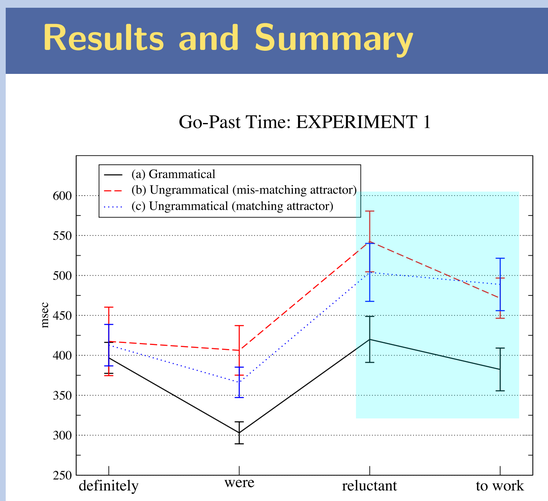
1b. Ungrammatical: Mismatching distractor

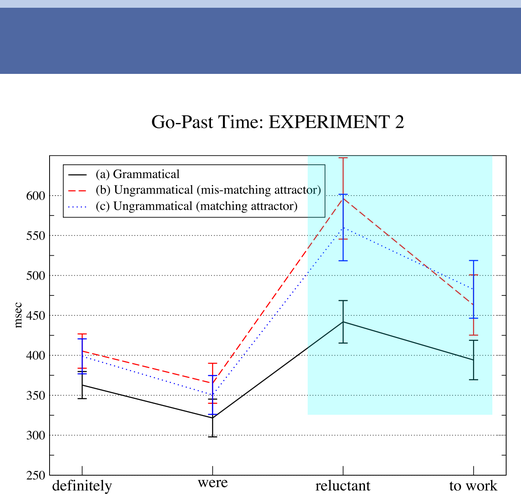
The nurse who cared for the widow definitely/ **were**/ reluctant/ ...

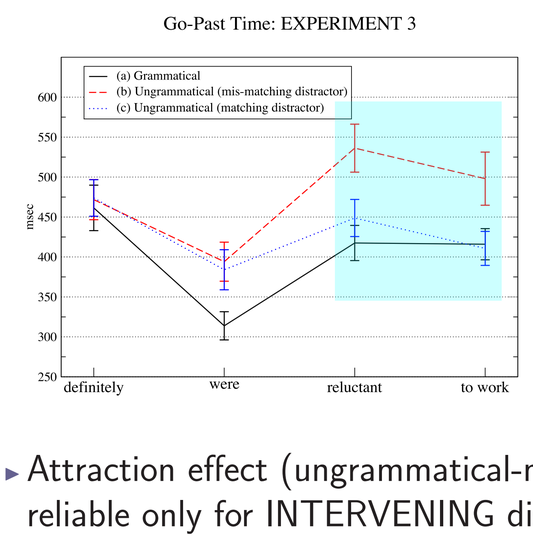
1c. Grammatical

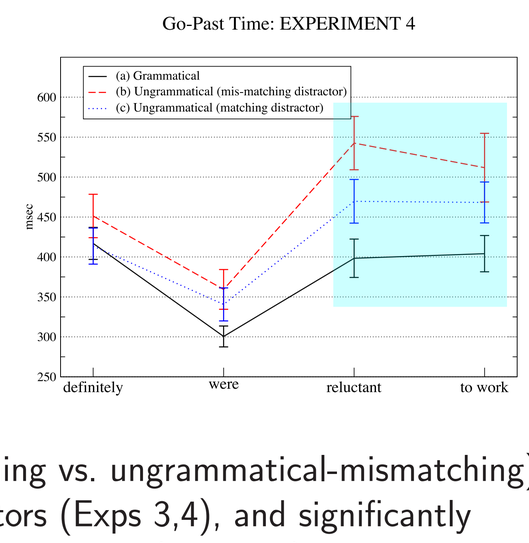
The nurses who cared for the widow definitely/ **were**/ reluctant/ ...

Results and Summary









- Attraction effect (ungrammatical-matching vs. ungrammatical-mismatching) reliable only for INTERVENING distractors (Exps 3,4), and significantly greater than for NON-INTERVENING distractors (Exps 1,2)
- No difference in (null) attraction effect as function of active status of dependency (Exp1 vs. Exp2)
- Grammaticality effect (grammatical vs. ungrammatical/mismatch) didn't differ as a function of intervention or active status of distractor

Conclusions

- Attraction effect may be affected by decay of distractor's activation over time (relative to target)
- Decay appears to be unaffected by whether the distractor participates in an active dependency.

Acknowledgements

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